

Paul's Picks #5: Subsurface Reaction (not aluminum waste)

Cincinnati, Ohio

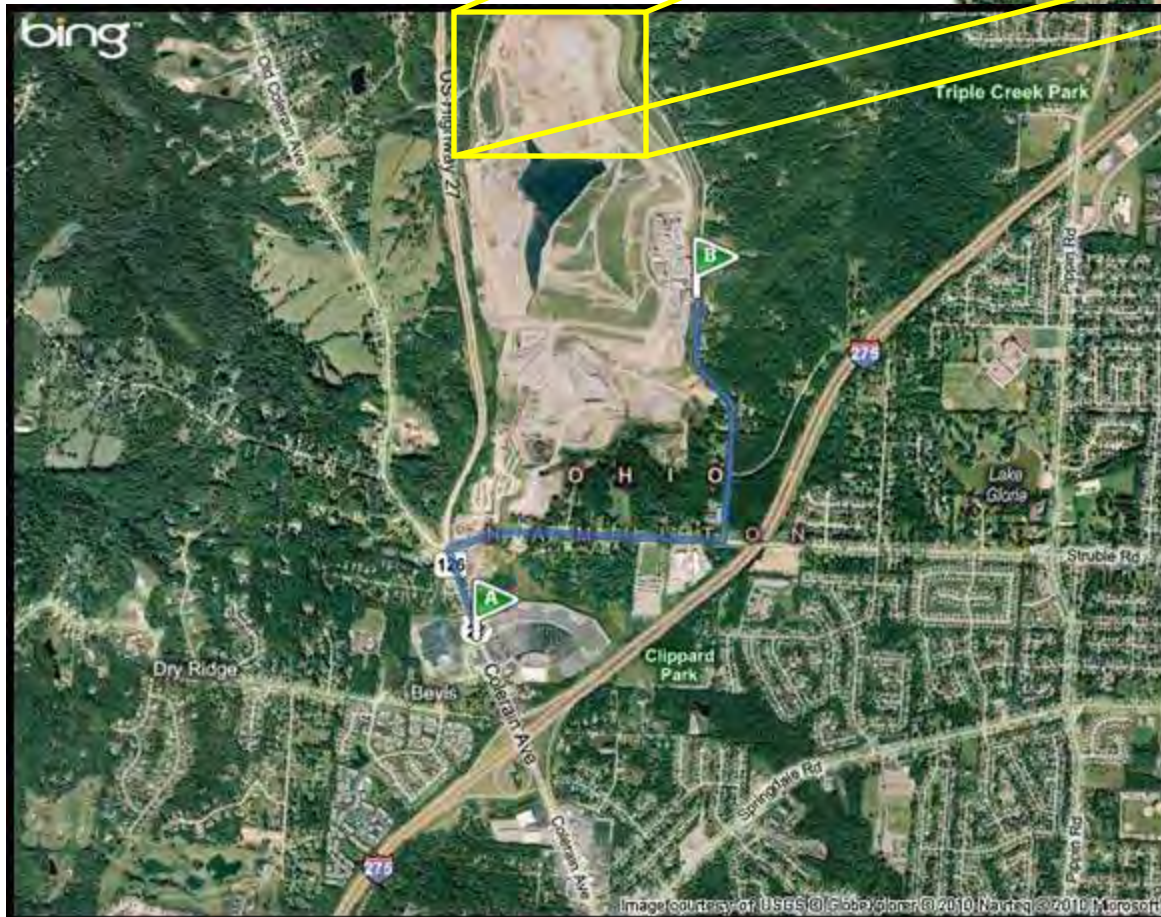
August 2009 - Present

Chronology

EVENT	DATE
Elevated temps, abnormal gas reported (>149F, methane < 50%)	8/31/09
Initial response plan submitted	9/17/09
Draft action plan	12/1/09
Flare interruption	3/4-5/10
Final action plan / DFFOs	3/18/10
DFFOs appealed	4/16/10
NOV for odors during flare interruption	6/3/10
Temporary Cap	6/15/10

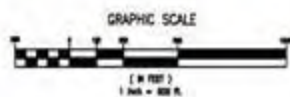
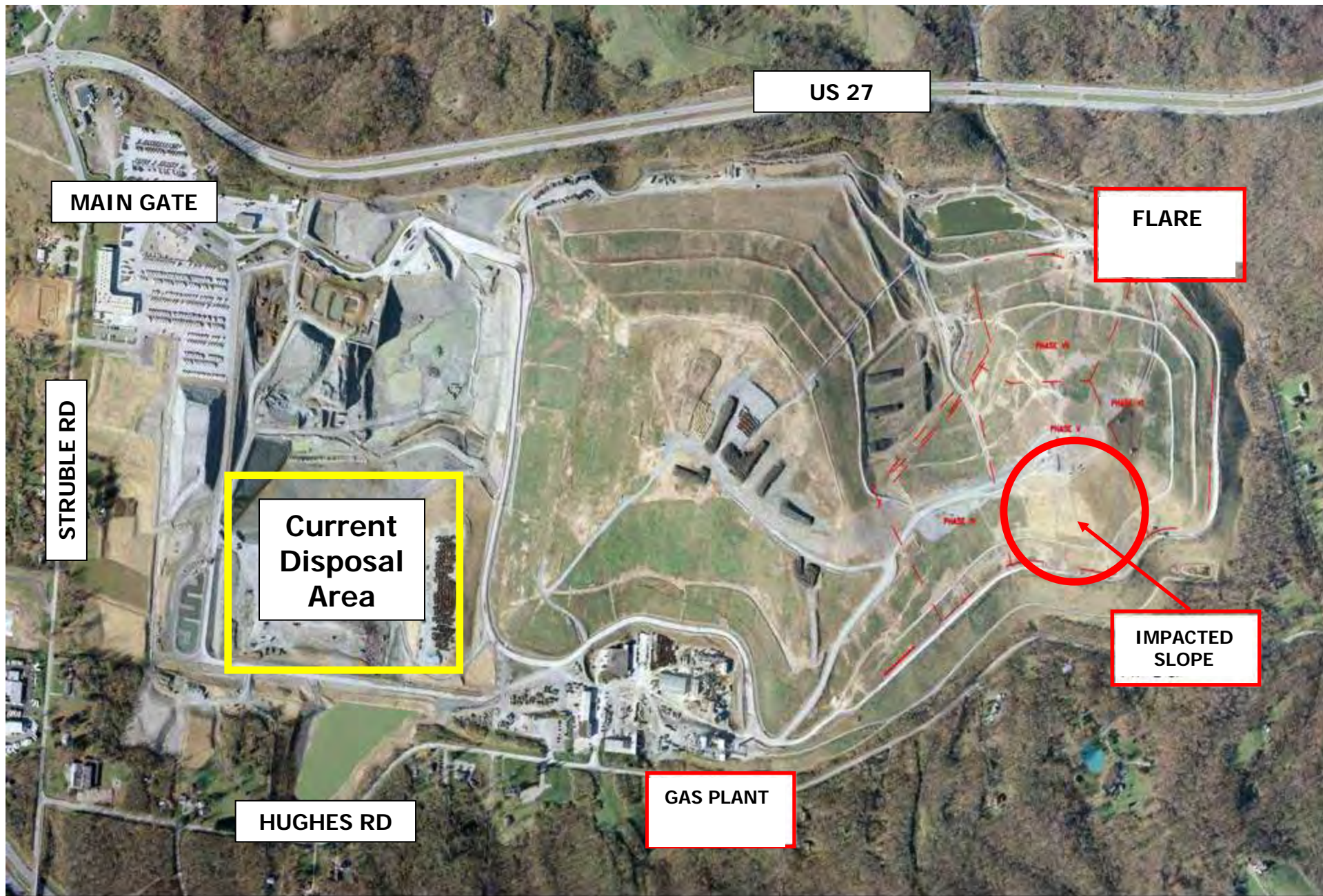
The Situation

NORTH SIDE OF SITE
“PHASE V”

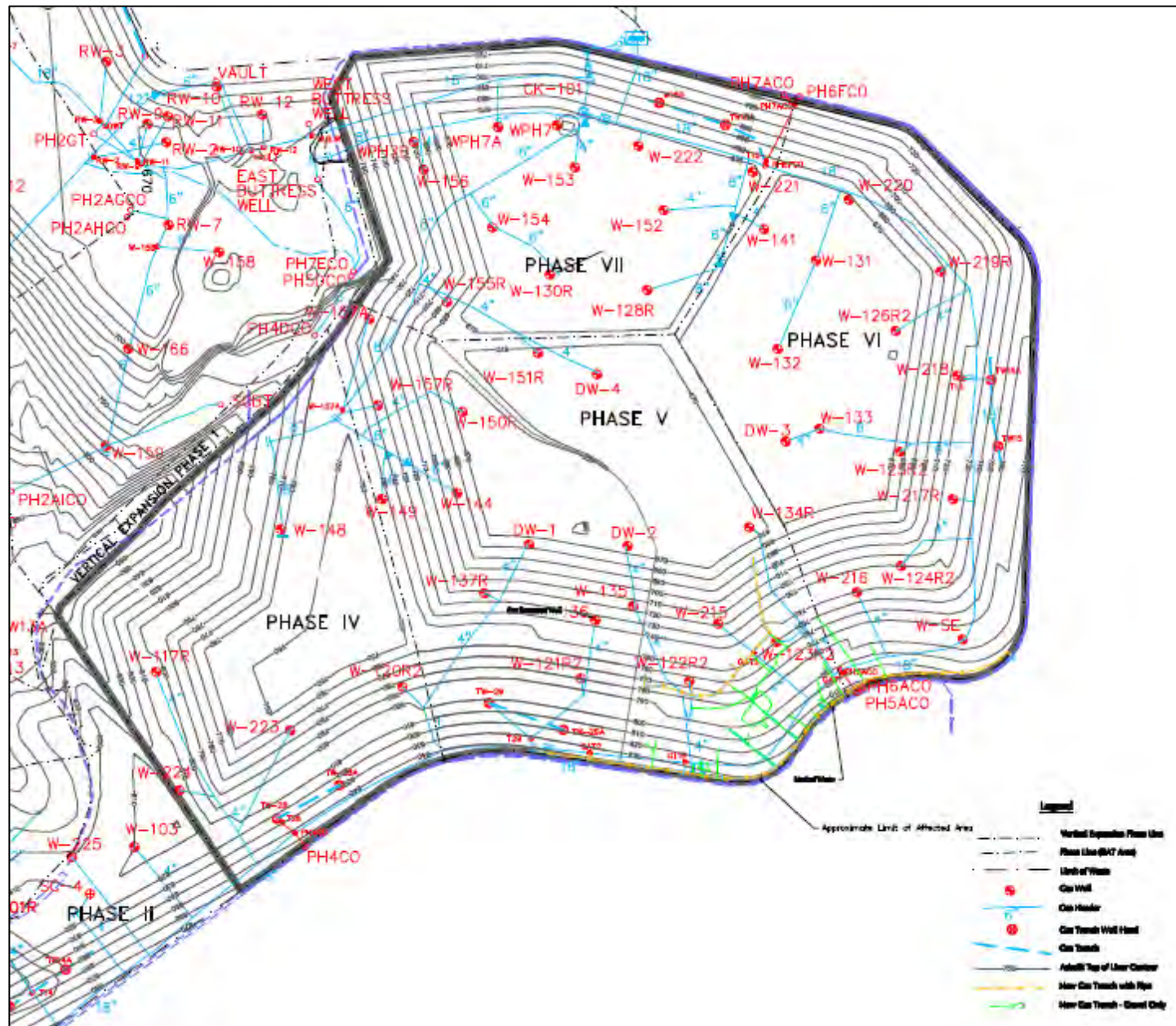


FIELD CONDITIONS

- Accelerated Settlement
- Abnormal Gas Quality
- Elevated Wellhead Temperatures
- Atypical Odors



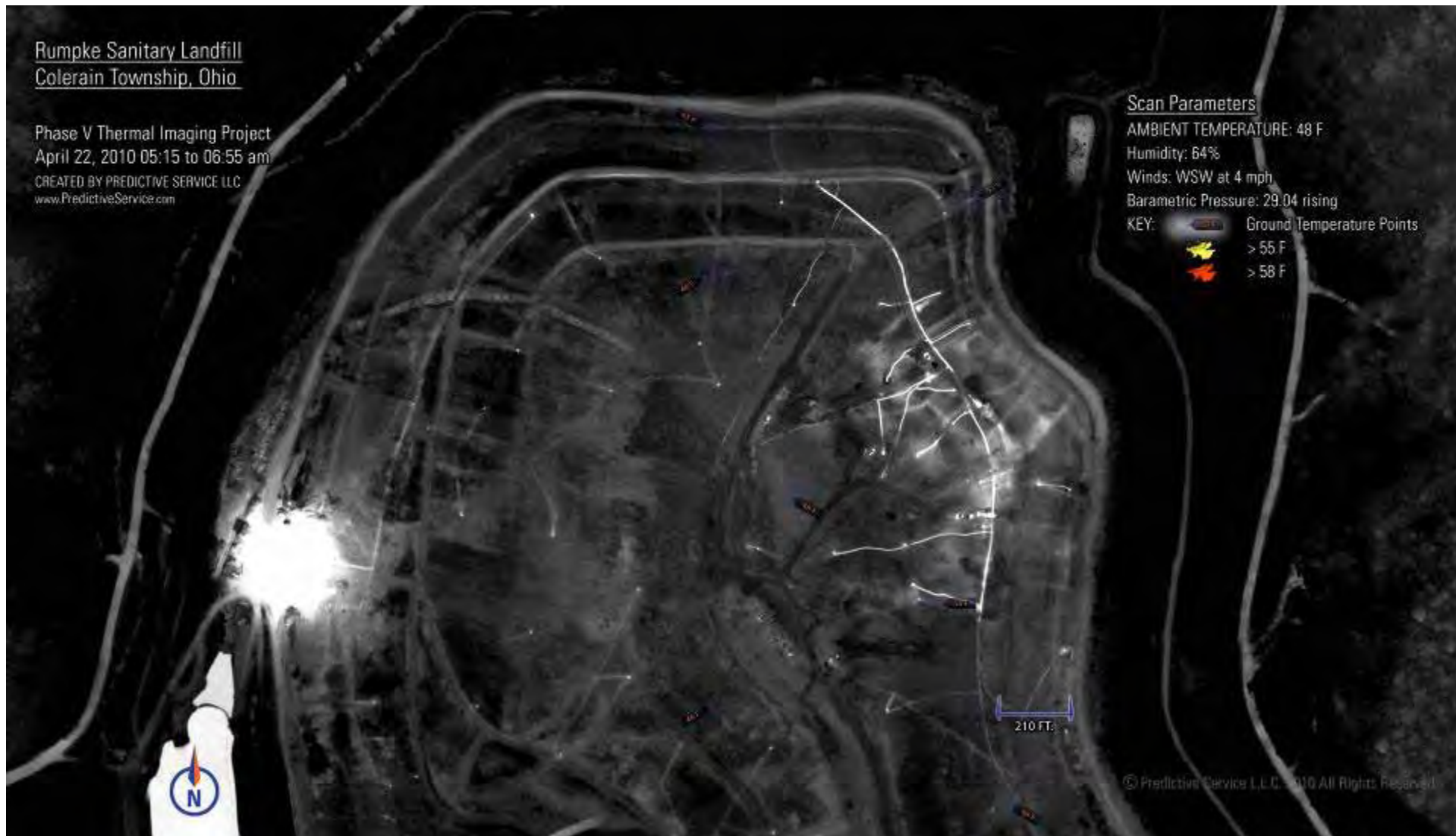
"Affected Area"



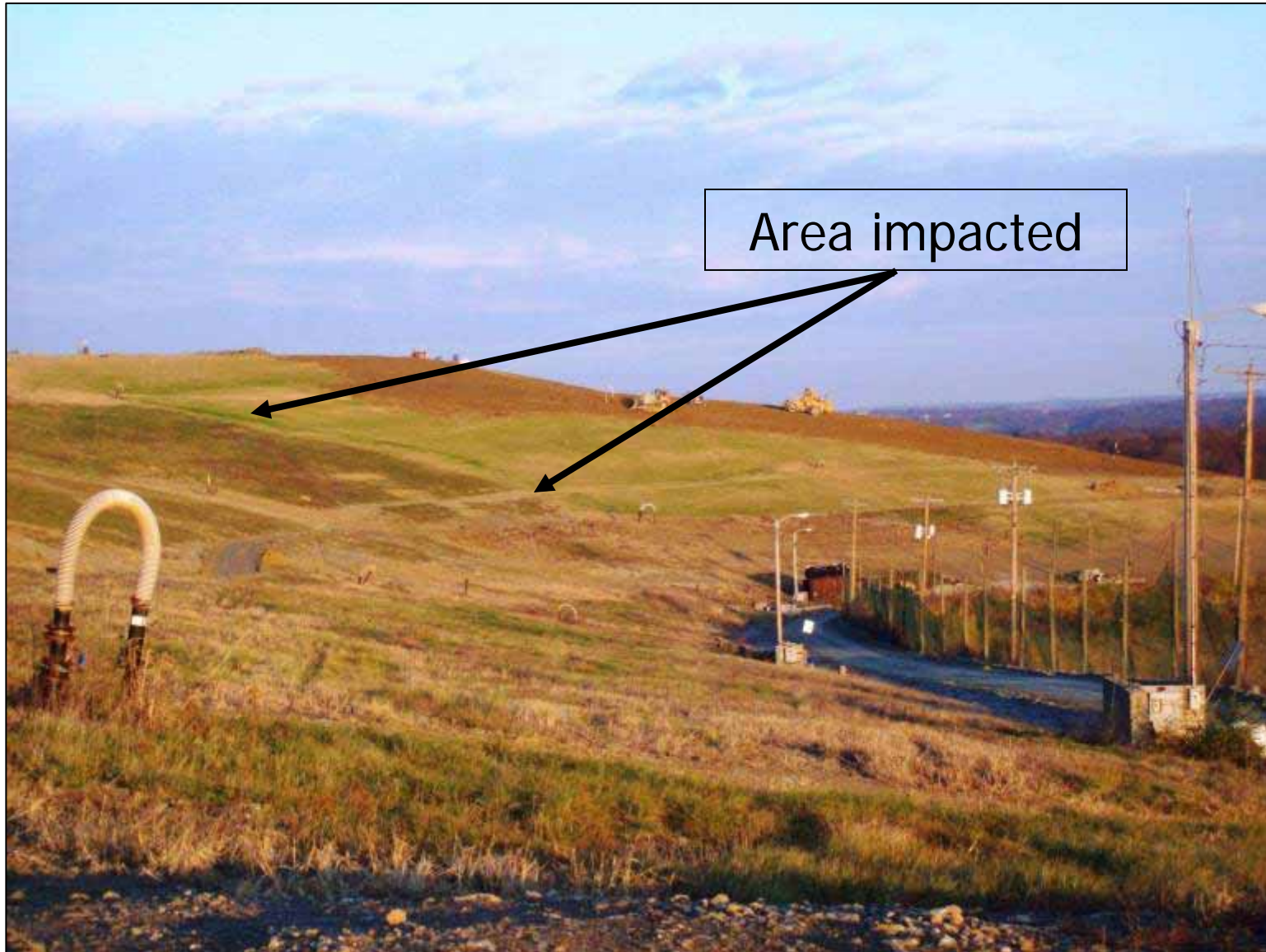


“Impacted Area”





'Phase V' - Before



'Phase V' - After

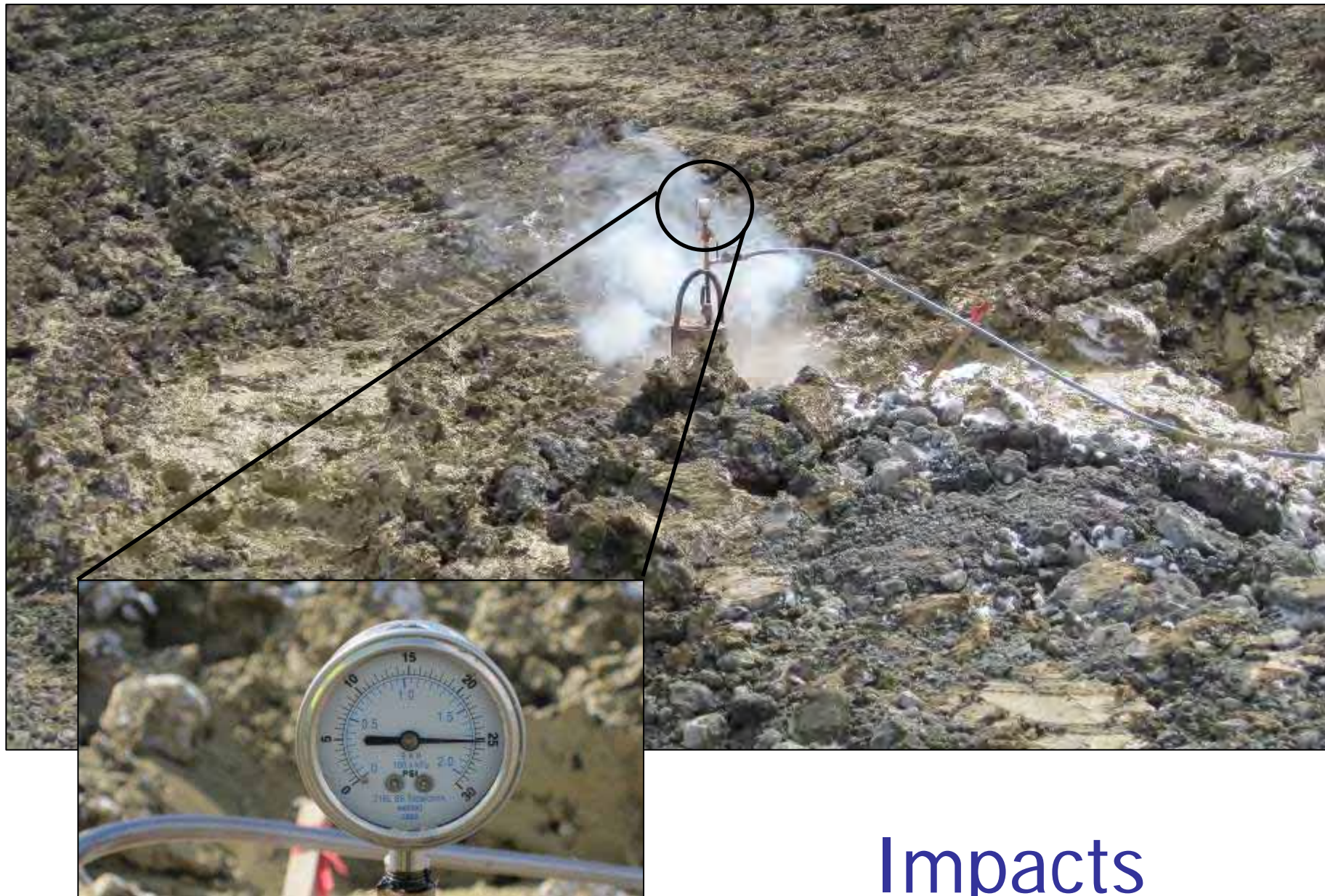


Impacts



Impacts





Impacts

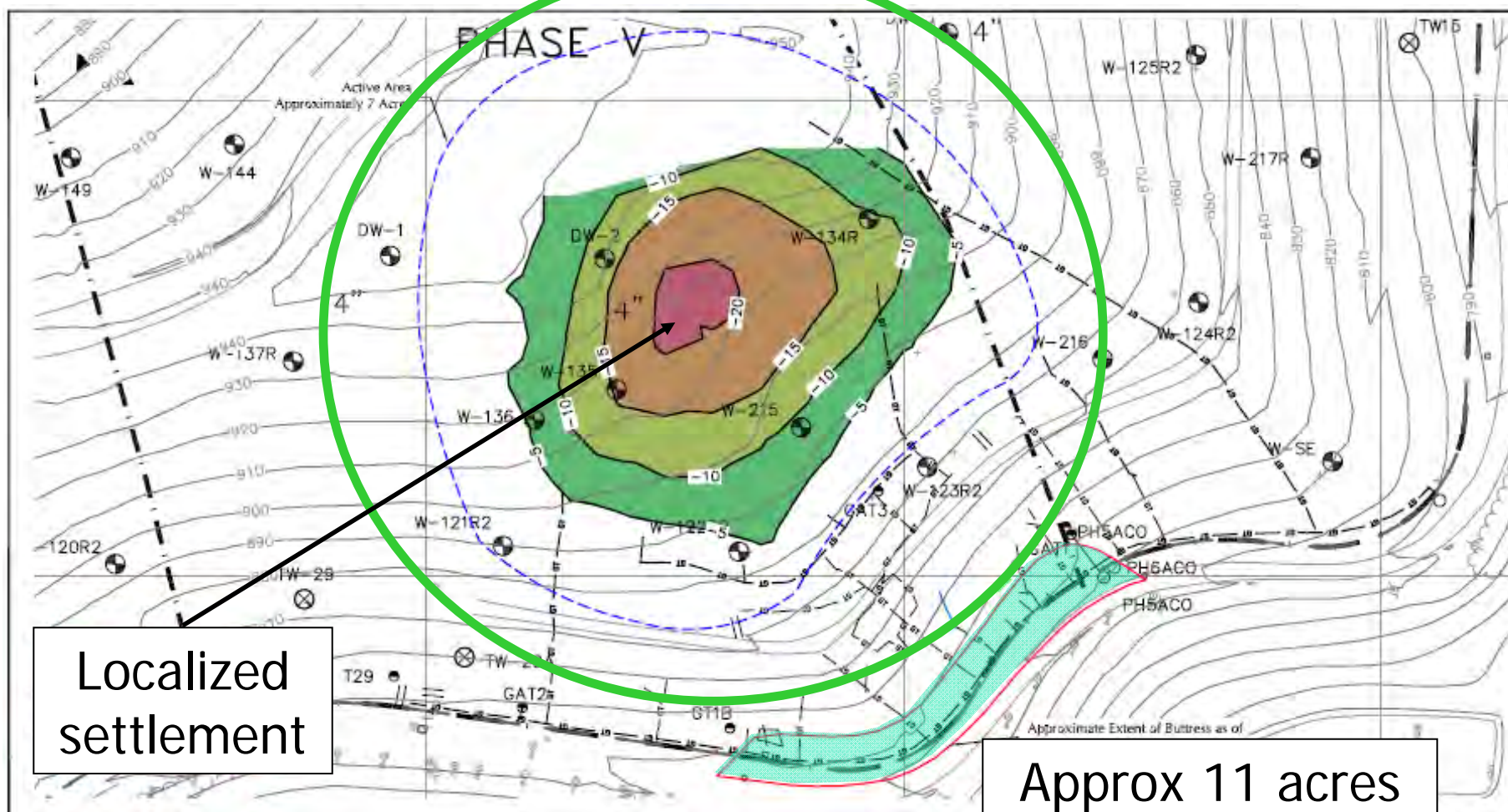
Impacts



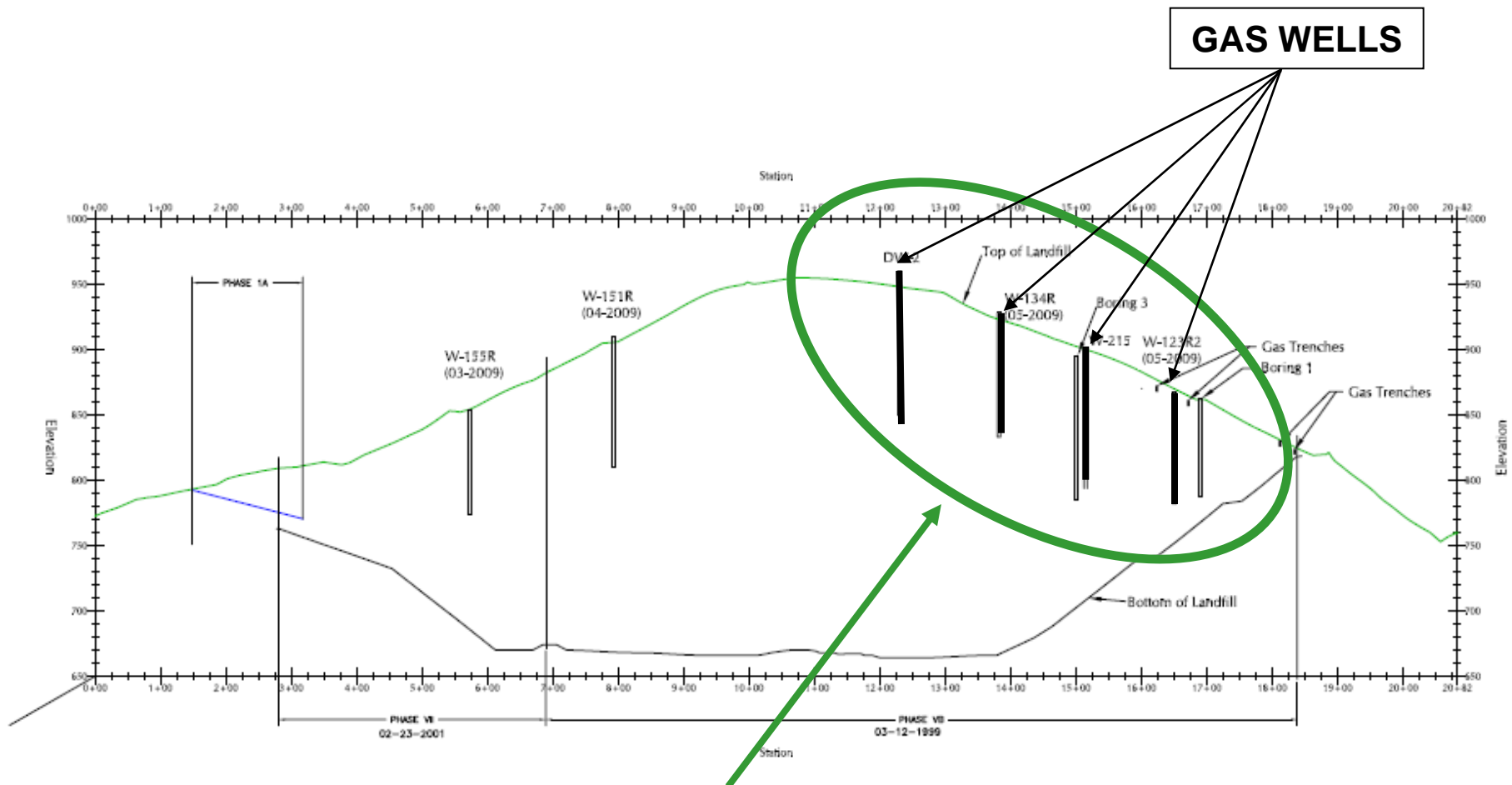
<u>Odor Complaints</u>	<u>Year</u>
106	2008
121	2009
170+	2010 (to date)

- Usually garbage odors
- In 2010, change to gas odors (primarily from Phase V)
- Spike in complaints and intensity during flare interruption (47 in 1 week)
- Air monitoring conducted by HCDOES during odor complaint responses & odor events
- All air sampling results to date are below regulatory & health-based levels for targeted air pollutants

Abnormal Settlement

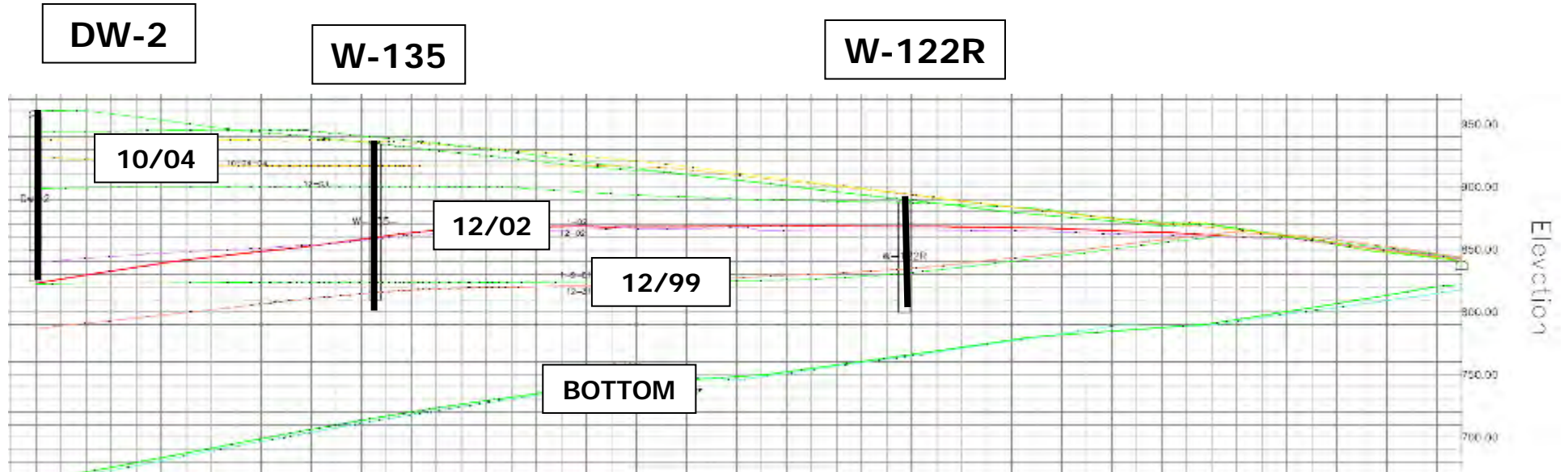


Landfill Cross Section



**Impacted Area
Filled from 1998 – 2002**

Waste Profile



Response

- 'Team Rumpke'
 - Ohio EPA, Hamilton County (DOES & PH), Colerain Township FD, US EPA Region 5, Rumpke, GSF Energy
 - Developed action plan
 - Weekly meetings, daily site monitoring
- Director's Final Findings and Orders (3/18/10)
 - Enforcement of action plan
 - \$98,000 penalty
 - Elevated temps in gas extraction wells
 - Does not preclude future enforcement

Action Plan Goals

- Ensure health & safety of workers/public
- Control offensive odors
- Maintain structural integrity
- Closely monitor area
- Prevent spread of fire & return area to normal
- Prepare for emergency situations
- Ensure compliance

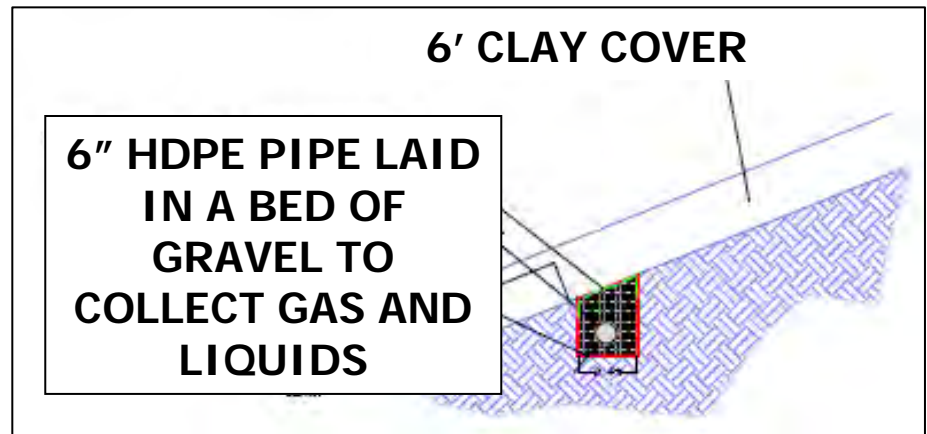
Response Update

- Odor Control
 - Additional clay
 - Gas, leachate, & condensate removal
 - Masking agents
 - Trenching
 - Temporary cover
- Stabilize & monitor slope
 - Buttress, pin monitoring, constant grading
- Daily inspections, upkeep
- Sampling & analysis
 - Gas, leachate, temps, waste
 - HOVs

Response

- Study
 - Gas fingerprint
 - Waste profile
 - Leachate analysis
 - Sentinel line monitoring
- Engineering
 - Flare modification (arrestor)
 - Above-ground header
 - Replace canaflex w/ metal tubing
 - Maintenance & replacement
 - Additional extraction wells / borings

Gas Collection Trench



Trenches installed
on side slope in
impacted area

Odor Control

Misting systems



Trailer

Fence line



Odor Control



Utility flare



Gas Plant

*Permit modification requested to
install thermal oxidizer

Slope Stabilization



Soil Buttress

“Odor Control Blanket”



Deployed over 19 acres in and around “impacted area”

“Odor Control Blanket”



Additional Verticals



Air Monitoring

■ Constituents

- Carbon monoxide
- Hydrogen sulfide
- Volatile organic compounds (VOC's) (60+)
- Explosive gases (methane)
- Instantaneous

■ Location

- 2x / week at 17 locations
- 15 + canisters in last 6 months
- Downwind fixed location
- RAT

Portable Instruments

SUMMA Canister



ppb RAE



Multi-gas



U.S. EPA Rapid Assessment Tool (RAT)

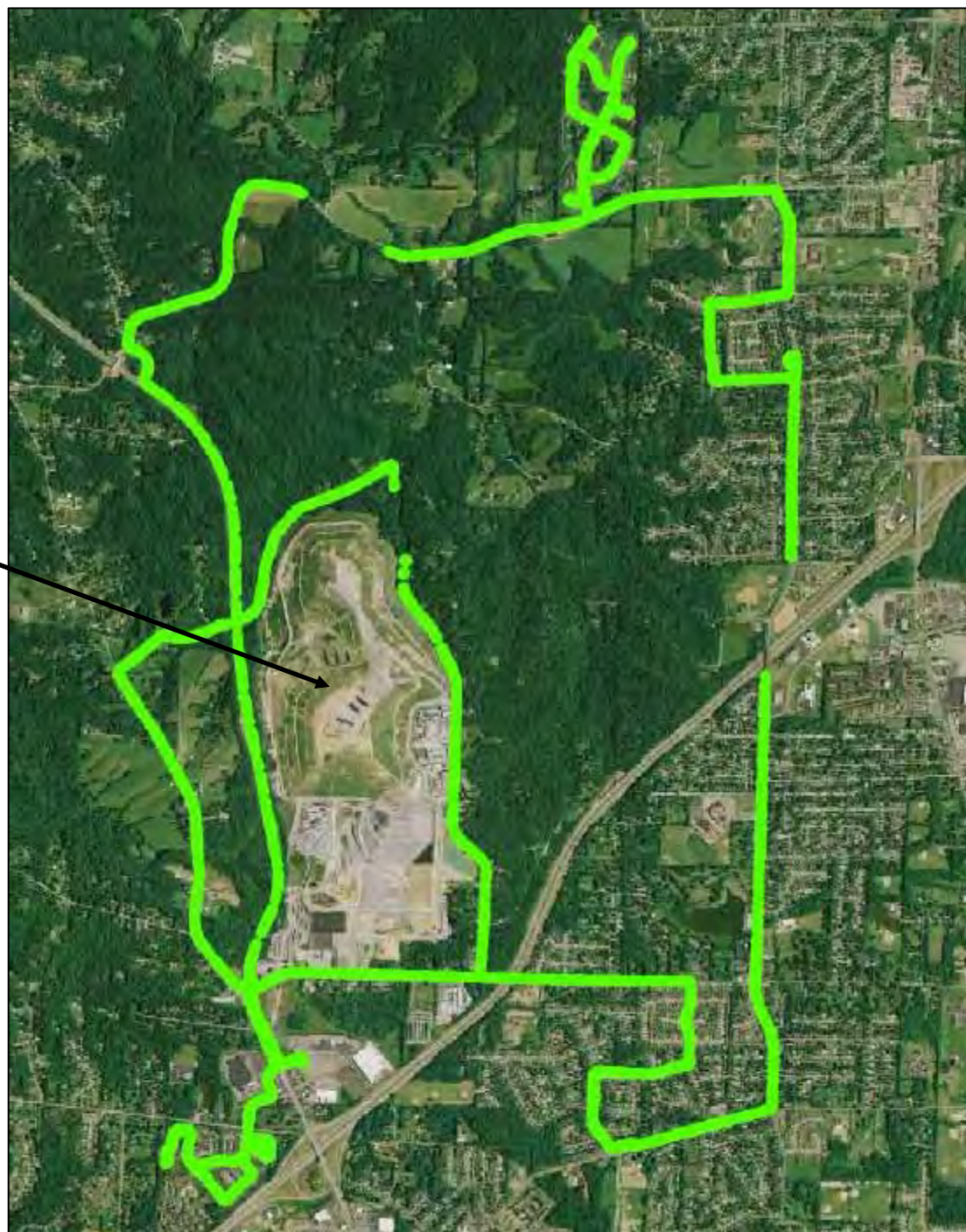


These monitors sample continuously for VOCs and H₂S and instantly map results

RAT Results

RSL

Latest
route
3/5/10



N

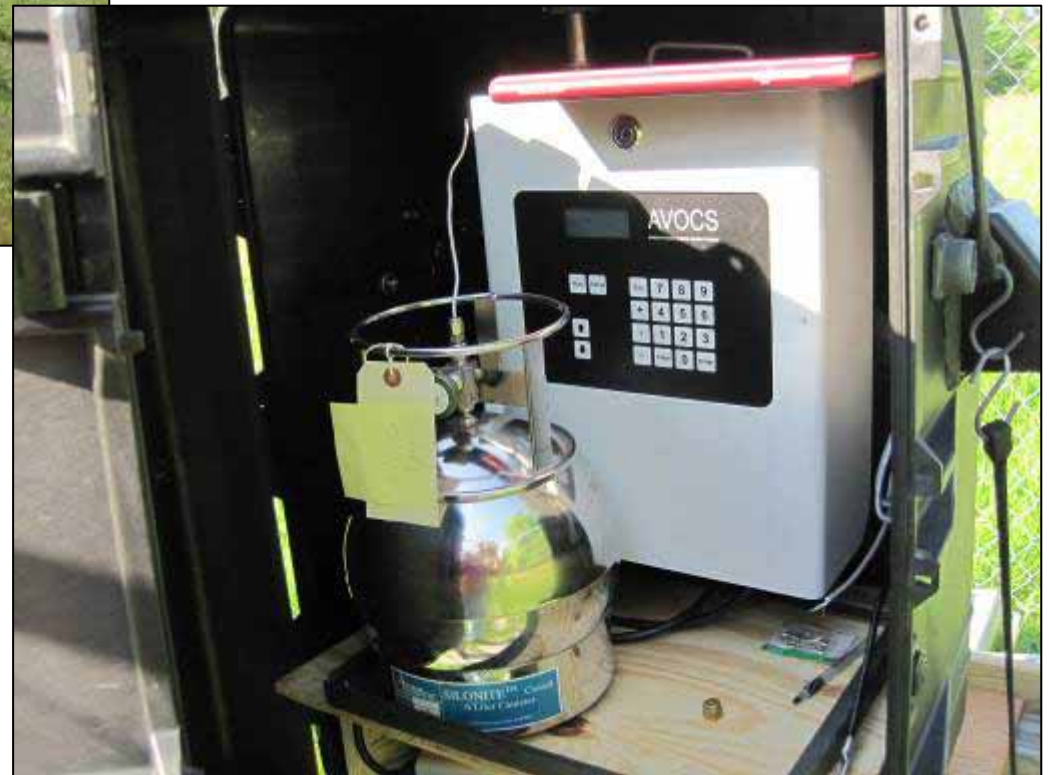
All levels
of
VOC & H₂S
< 1ppm

Fixed Station

Located in low-lying area in a predominantly downwind area of Phase V



Fixed Station



Air Summary

- All air sampling results to date are below regulatory & health-based levels for targeted air pollutants
- A new fixed monitoring station is taking 24-hour samples every 6 days
- DAPC is looking at data in coordination with HCPH
- Data is available on website

Odor Complaints

- Direct to Rumpke and/or Hamilton County DOES
 - Phone (24 hours)
 - Web (online form)



Next Steps

- Contain & control strategy
 - Action plan
 - Monitoring
- Communication
 - Website, fact sheets, updates
- Coordination
 - Team Rumpke

Contingency Plan – Isolation Break

